



**“Dealing with Side Effects of Treatment Now and Later”
ShareRing Network
Wednesday, July 16, 2008**

ARLINE KALLICK: Hello everyone, and welcome to the Breast Cancer Network of Strength, ShareRing Network national teleconference. Our call will begin with tonight’s speaker Dr. Banu Arun. Dr. Arun is Associate Professor at the Department of Breast Medical Oncology and Clinical Cancer Prevention at MD Anderson Cancer Center at the University of Texas. She is Co-Medical Director of Clinical Cancer Genetics and Director of High Risk Breast Clinic. Dr. Arun earned her Fellowship in hematology and oncology at the Lombardi Cancer Center at Georgetown University in Washington DC. Her clinical research involved identification of targeted therapies for breast cancer treatment and breast cancer prevention. She’s the principle investigator of several medical, clinical trials evaluating agents in metastatic breast cancer. Her clinical research in prevention is focused on identifying novel agents and risk biomarkers for breast cancer prevention, is the principle investigator of several prevention trials. Another focus is characterizing risk factors in high risk women with or without the BRCA mutations.

We’re very happy to have her with us this evening. Our topic is “Dealing with the Side Effects of Treatment Now and Later”. The presentation will be followed by a question and answer session and will end with small group discussions. We realize it is difficult to answer everyone’s question in a one hour teleconference. So if your question does not get presented during the question and answer portion or the group discussion at the end



of the hour, you may contact the Network of Strength hotline at 800-221-2141. The hotline is answered by certified peer counselors who are breast cancer survivors and it's available to you 24/7.

When presenting a question to Dr. Arun, please be courteous to other callers by keeping your question brief and realizing that this cannot be a private consultation. A transcript of each call will be available at our website one week following the call. Visit our website at www.networkofstrength.org. Recording of past ShareRing calls are also available now as pod casts through iTunes. To download past calls or to subscribe to the ShareRing pod cast, search for ShareRing within iTunes. You can also listen to ShareRing calls at networkofstrength.org/podcast.

We are now ready to begin tonight's teleconference and we welcome Dr. Banu Arun.

DR. BANU ARUN: Hi everyone, it's a great pleasure for me to be here with you tonight. What I would like to do is give you a very brief overview about breast cancer, a little bit about risk factors, treatment and then go into the side effects and how we manage them in general. Then I will be available for questions as Arline mentioned.

So a few words about general information about breast cancer, as I think everybody now knows that breast cancer is the most common seen cancer amongst women and a woman's lifelong risk to develop breast cancer is about 10 to 11%. And so the prevalence is very high.

There are those certain risk factors which would put a woman at a little bit higher risk than the average population, so higher than 11%, and those are for example, women who have had previous biopsies in the lab showed some benign but risk lesions, such as the atypical hyperplasia or (inaudible) we now know that having had these lesions increases subsequent breast cancer risk by about two to three fold. So the 10% then goes up to 20, 30%. But I want to mention that not all of the benign lesions increase risk, so if any of you have had biopsies before and you were told it's benign, don't panic and you can go back to the past reports or discuss it with your doctor. For example, fibrocystic disease, fibro adenomas, and many, many other changes in the breast are benign and they don't increase risk. But a few of the benign lesions do increase risk.

The other risk factors include hormonal replacement for example, you most probably are aware of the recent publications that estrogen and progesterone given in the post-menopausal setting for a prolonged time does increase breast cancer risk by about 1.3 fold. It's not very high and one obviously has to weigh the risks and benefits of this approach, however I think it's important to know that while hormone treatment therapy can fix some of the problems, it can increase the risk of breast cancer.

One important aspect we discuss with our patients and I'm sure that you are familiar with that as well and your doctors discuss it with you also, is the importance of family history. So I'm sure that you are concerned about relatives who have breast cancer and the unaffected relative if their risk is increased, mothers, sisters, daughters and we know



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that if a woman, for example, has a family history of two first degree relatives with breast cancer and first degree is defined as mother, daughter or sister, then the healthy woman's risk is at least two fold increased. So that 10% again goes up to 20%. So I think it's important to let your healthcare providers know there's a family history of breast cancer.

Recently, about 10 to 15 years ago, you might have heard that two genes were cloned. They are called BRCA1 and BRCA2 genes and now we know that individuals who have a mutation in one of those genes has an up to eight to 10 fold increased risk of breast cancer, so the lifelong risk jumps from 10% to anywhere between 60 and 80%.

The good thing is that only 10% of breast cancers are these genetic cancers. 90% are not. So again, I don't want anyone to panic and think that they have the gene, however, there are some red flags we look at when we want to go after this and see if there's a gene mutation in the family. And those red flags are if a woman was diagnosed with breast cancer at early age, pre-menopausal, if they're multiply young females with breast cancer, if there's male breast cancer, if there's breast and ovarian cancers. So there are certain clinical features which would make your healthcare provider think that there might be a genetic component and would then counsel with you and maybe perhaps refer you to a genetic counselor. But again, only 10% of the breast cancers are genetic and 90% for the majority is actually not genetic. And, but this means that people who don't have the reason in, specific reason why that cancer happened, but it's most probably related to many factors, but not necessarily to the inherited genetic mutation.

The importance of finding that mutation is especially in the unaffected family members is that we could consider some extra screening to prevent cancer instead of just doing mammograms, MRI screening could be added or more careful screening for ovarian cancer can be added as well. So knowing that risk might help women who did not show (sp?) breast cancer in the family to do more intense screening. And again, all of these things are extensively discussed in high risk clinics such as we run and many other institutions have as well.

I want now to get to the information about general breast cancer treatment approach, and what happens after diagnosis. And I would like to break this down into early and advanced disease. In early disease as you know besides surgery and if necessary radiation therapy, we do discuss and see if maybe chemotherapy or hormonal therapy is indicated. The indications of chemotherapy depends on the size of the tumor, depends on if lymph nodes are involved with the tumor and the number of lymph nodes, the grade of the tumor. The drugs that we usually use in early breast cancer include anthracyclines and I'm throwing out to names right now, but thinking that you, most of you will be familiar with those. And then taxanes are commonly used drugs, cyclophosphamide, gemcitabine, abraxane, all of this, and some of the newer ones which we use.

In terms of hormonal therapy, again it depends on if the tumors have the estrogen and/or progesterone receptors. So not all of the tumors are what we call ER and or PR positive

and if they are not, then the hormonal drugs such as tamoxifen or the newer versions aromatase inhibitors are not indicated and we don't give it to our patients because there's no benefit, and if anything, there would be more harm. And those drugs are easily taken. They are oral drugs and usually we give them for five years.

The third group of drugs we use in the adjuvant setting or early setting is Herceptin, you must have heard about that drug. It's really not chemo, it's not hormonal, we call it targeted therapy. It goes and binds to a protein on the tumor cells which is called the HER2neu protein, if it's there, and then induces cell kill and kills the cancer and many studies have shown that it's really improved the outcome of treatment.

But again, not everyone is eligible to take Herceptin because only 25% or so of breast cancers have that protein, so that drug can work. So 75% of the tumors don't have that protein and giving Herceptin will not have an effect, if anything, again it will have side effects but not the benefit.

In terms of advanced breast cancer, I think we are luckier than many other solid tumors; we have a number of drugs available. Again the ones I just mentioned, the anthracyclines, the cytoxans, taxanes, capecitabine, navelbines, gemcitabine, are all drugs we use in the advanced setting. We also use, if indicated, hormonal management. Again the tamoxifen, aromatase inhibitors such as the main five, you know, three of them out there anastrozole (Arimidex) , letrozole (Femara), exemestane

(Aromasin). Faslodex? (inaudible) is another one which we use in advanced breast cancer as well, again only when the tumor has the ER and/or PR protein.

What I said about Herceptin is also true for treating advanced disease. Again we can use Herceptin in advanced disease, as long as the tumor has the HER2 neu protein and again only 25% of the tumors have it. In the advanced setting, we actually have a little bit more targeted drugs. So besides the Herceptin, there is another drug out there which is new, lapatinib (Tykerb) is an oral drug which we use after Herceptin. It's also a targeted drug and is not chemo, is not hormonal and has a different side effect profile. It's a little bit easier so we have those options as well. So for advanced treatment, again we have a number of new drugs available which we use every day in our clinics.

I want to move on to the side effects of the chemotherapy and then the side effects of the hormonal therapy. It will be based on the drugs we just discussed, but I would like to break it down into acute or immediate side effects of chemo versus the longer term side effects of chemotherapy and how we manage them in our clinics.

In terms of acute, short-term side effects which I think we see pretty soon once we start the chemotherapy include gastrointestinal side effects such as nausea and vomiting. I can tell you from my experience at least, that unlike many other cancer type treatments, we don't see that much vomiting any more because of the pretty advanced drugs available to prevent the vomiting. Nausea can happen depending on which drugs and combinations they use and the doses. However even nausea; I have really not seen any



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grade 3 or 4 nausea recently, maybe grades 1 and 2 in our patients, because we can control them with the group of drugs available like Compazine, Zofran is one of the drugs that even Ativan, Emend and there are some other older drugs which we sometimes use for more advanced cases as well. But I think at least from breast cancer treatment point of view, I can say that over the last 10 years we have seen really quality of life, improvement in quality of life in regards to nausea and vomiting because of the drugs we use, also proactively.

I think one important point is that we tell our patients not to wait until nausea comes and kicks in, but to start taking the drugs at the earliest signs of nausea, because it's easier to control it before it reaches its maximum strength.

Another acute side effect could be, besides nausea and vomiting, diarrhea or constipation. And it's interesting, some drugs cause nausea — diarrhea in some patients and constipation in others, so it most probably also depends on the person and how the body reacts to a certain drug. The diarrhea is not that bad, usually its a few days and we try to tell our patients to make sure that they drink a lot and if there's really a lot of fluid loss, then come to our clinics for some hydration. Some of the new drugs such as Lapatinib-one of the new targeted drugs which don't have the side effects chemotherapy has, has actually diarrhea as a side effect, so we see the diarrhea more with the new targeted drugs rather than the chemotherapy. But again, knowing that the risk is a little bit higher, we are proactive and prescribe more anti diarrheal medications in our patients.

One other acute side effect is bone marrow suppression. When we give chemotherapy, these are cytotoxic drugs, and they go and kill cancer cells, but they like to also kill fast dividing cells in the body. And the bone marrow is a very active organ, because it produces red cells, white cells, and platelets. As you know, the platelets are the cells which help with blood clot formation and prevent bleeding. The white cells fight infection and the red cells obviously carry oxygen and if red cells go down, we have anemia. Because these cells are fast dividing, chemotherapy suppresses them 7 to 14 days after chemotherapy and we see a dip in these counts. So we have some of the drugs causing significant **neutropenia**. Some of the drugs don't and we pretty much know which drugs are causing more **neutropenia**. I think it is important to know that if you take this drug, not to be around infected people and maybe to wear a mask or do a lot of hand washing. We also tell our patients, which is a very important management point, that when the bone marrow suppressive drugs are taken and our patients develop a fever and temperatures and signs of infection, they really have to come to the doctor because we need to check the counts and see if there's an active infection going on, because having low white counts is something--but having low counts and being infected is another issue, which is very important. Then we might even have to admit our patients to give some antibiotics.

But if it's just low counts and nothing else, no infection, we don't admit, we just follow and then maybe decide whether next time we should either decrease the dose, or give some growth factor support. For example, for those who have received (inaudible)



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GCSF or the trade name Nupagen, Neulasta the daily shots we give sometimes to kind of boost the bone marrow to produce more cells faster, so that there is no time to develop infections. But it all depends again on the degree of the bone marrow suppression, the risk of infection and the type of the chemo, so that needs to be discussed again with your healthcare provider and with your doctor.

In terms of the rest of the bone marrow, besides developing decreased white cells, and the risk of infection, some of the drugs can cause anemia. I think with our breast cancer drugs that rate is very low. We don't do as much transfusion as other diseases, because our drugs really don't cause a lot of anemia. It goes down a little bit, causes fatigue and if that happens, and if the fatigue is significant, then we can give growth factor support or a blood transfusion.

And then the platelets again are the cells which help with blood clot formation and prevent bleeding. If they are too low there is a risk of bleeding. That again, I don't remember that I ever was in the last ten to 15 years ever transfused any patient, any of my patients with platelets, because our drugs simply don't affect the platelets that much. And if it is, it's really a little bit and not a lot. So we are not worried a lot about platelets and bleeding with our treatments. And if it happens, there must be maybe another reason going on in the bone marrow which requires then further investigation.

I want to come back to the fatigue a little bit with chemotherapy. Everybody, somehow, to some type of degree experiences fatigue and that can be from, range from grade one



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to two, three, up to grade four. And I cannot say it's related to a certain drug because sometimes we see that one patient has just a little bit fatigue, tiredness with the drugs, and another patient has extreme fatigue with the same drug. So most probably they are factors in the body which contributes to that. And of course, we also have to make sure that your doctor makes sure that there are no other reasons, so hypothyroidism, like thyroid dysfunction that can cause fatigue and there might be some other reasons, and maybe it's not only the chemotherapy.

As I mentioned, anemia can cause fatigue too, so if the red cells really go down, then we might have to be proactive and give some blood transfusion to improve and increase quality of life.

Some drugs have some certain specific side effects. Some drugs cause soreness of the mouth and throat and it can, that can be from manageable to a grade of non-manageable where a patient cannot even eat and drink. Again with breast cancer drugs,

it happens rarely, but it might happen and we have drugs available which is sometimes rinsed and swallowed actually, if there's also some soreness in the throat, which has a pain killer in it, local anesthetic, but also an antiseptic which prevents some infections, because you want to make sure that these sores don't get infected. Otherwise you will need to get IV antibiotic treatment.

We have a number of our patients complaining of nail changes, hand and foot. And again certain drugs are known to cause it more than others. As long as the, there's



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hygiene and it does not look infected, I think its okay, you just have to be careful and if there is a purulent, bad smelling, darkish green fluid coming out and it looks infected, sometimes the podiatrist may have to pull the nail. But that's very rare, usually its only discoloration, the color changes, it looks ugly, but then after chemotherapy it goes away and improves. But a number of patients initially get scared of this, but then it gets better.

Some drugs can also cause lacrimation like tearing in the eyes, Taxotere or docetaxel can cause that. Recognizing it early is important. We send our patients to ophthalmology before we start docetaxel because if there is a little narrowing in the tearing canal, then they can put a little silicon tube in it so that the narrowing does not get worse with the treatment. Otherwise, there will be a lot of lacrimation from the eye. But that's also fixable and after chemotherapy they actually can take that silicon tube out and then there are no problems any more. A drug called Capecitabine or the other name Xeloda can cause what we call hand/foot syndrome that is soreness, redness in the hands and palms and fingers. It is really drug and dose related, so it doesn't happen right away, it happens with several cycles and with higher doses. And there is no magical drug to prevent that really. When that happens we stop the treatment for a week or two weeks until it regresses and then start back on a lower does. Very rarely it can never start, but most of the time we are really able to start at a lower dose and continue with the drug, if that drug is working because we don't want to stop something that is working. We want to kind of handle the side effects and go around it.



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Some other side effects of the treatment are some sleeping disorders. Again there might be many other causes for that, but if it's related to the drugs we do support with drugs which can help our patients sleep. Most of them are also decreased anxiety and also decreased nausea, Ativan for example, is a sleep aid but also decreases nausea and anxiety, so a number of our patients actually like that. And once the chemo is done, the body doesn't need it any more, so I know that some patients are concerned that these drugs may be addictive, but they are not. Because the body needs it, you give it, and after the treatment is done you don't need it and then you can taper yourself off. And I never had a patient who continued staying on these drugs.

In terms of long-term side effects, I think the main two issues we discuss with our patients are the heart side effects, cardiac side effects with the Anthracyclines and then the newer drug Herceptin. With the Anthracyclines, there is a maybe 1%, maximum 1.5% risk of developing heart failure within the next 10 to 15 years. With Herceptin it might be a little higher. However we carefully have to discuss the risks and benefits of the treatment. So if your chemotherapy will give you a 10, 15, 20% benefit and the heart disease risk is only 1%, to many patients it's really worth it because the alternative would be not being able to treat the breast cancer. Plus with all of the supportive cardiac medications as well as our cardiology colleagues and screening up front for heart disease, I think that risk really goes down even below 1%. So we, in patients who need it, we do cardiac scans, muga scans and echos to assess the heart function and then decide whether we should give the drug or not. Sometimes we see that we cannot give it, so we don't give the Anthracycline, we look at some alternatives.

Another long term side effect, which in all honesty I have not seen yet, is leukemia risk within the next 15, 20 years, which again is not more than 1%. Because we basically give hydrotopric drugs and they might cause some problems in the bone marrow. But again, I have not seen it, it's been reported, but one has to weigh the benefit against the risk of leukemia. If the benefit is again high of chemo, 10, 15, 20% even in some cases 30, 40% then to many patients as well as us, it's acceptable.

In terms of hormonal side effects. I mentioned two drugs Tamoxifen and the aromatase inhibitors. Tamoxifen is the older drug which has been around for 20, 25 years and we have used it in the advanced disease, early disease. We now even use it for prevention because its FDA approved for prevention in women who don't have breast cancer. But we know Tamoxifen blocks estrogen and unfortunately because of that, it induces menopausal symptoms, so our patients have hot flashes, fluid retention, weight gain, muscle aches and pains. Now not everyone has everything, as you might know. These are reported and many of my patients wouldn't have any problems at all, and some people have different degrees of one or the other. I don't think I have a patient who has all of the reported side effects. So it's a pretty tolerable drug.

What we can do about it? I think when you stop the drug, it goes away. However, Tamoxifen is very effective in reducing the risk of the recurrence of breast cancer or treating advanced disease. So again one has to weigh the benefits and risks and maybe not stop the drug if it's working. There is no magic treatment to replace the menopausal

symptoms because it blocks estrogen and that's what we want to do. So we wouldn't be giving estrogen back to overcome the symptoms, because we're trying to block it, estrogen, we don't want estrogen in the body. Therefore it is a little bit difficult to manage that.

Two major side effects of Tamoxifen is blood clot risk and uterine cancer risk. So for blood clots we tell our patients if there's a strong family history or a person who has blood clots, we don't give Tamoxifen, that's number one. Number two, is if for example, our patients fly and they're on the plane, we tell them to get up and walk around every hour or so and keep active so that there will be no blood clot formation. The other major side effect is uterine cancer. And what is recommended is that patients have yearly gynecology exams just to make sure that there is no thickening in the uterus lining, which then can lead into cancer, uterine cancer.

I have to say though that many studies have shown even though the risk of uterine cancer is higher in women who take Tamoxifen, all of the uterine cancers found are actually stage one, because patients have screened for it and the treatment of it is hysterectomy so, and then patients are cured. So even though there are more cases, nobody really suffers from the disease because it's taken care of with the surgery.

The second group of drugs, the aromatase inhibitors as I mentioned, Arimidex, Letrozole, or Exemestane, are different than Tamoxifen. The mechanism is different but it does the same thing. It again depletes estrogen in the body because we don't want

estrogen in ER positive disease it can feed the tumors, so we're trying to get rid of it and the aromatase inhibitors do that. It is only used in post menopausal women, I have to say that, and because like Tamoxifen, it blocks estrogen. It can be used in menopausal symptoms, hot flashes, fluid retention, muscles aches and pains and because it blocks estrogen different than Tamoxifen, it can actually decrease the bone mineral density. So we are very proactive and to manage this we do mineral bone densities before and during treatment with Arimidex and then if indicated, you use bone builders such as Fosamax and of course vitamin D and calcium.

However, the aromatase inhibitors don't cause endometrial cancer and don't cause blood clots. And they are about 20% better than Tamoxifen, so I can tell you that at least in, at our institution, when we discuss those two drugs, 80 to 90% of our patients opt to take the aromatase inhibitor over Tamoxifen because of the better efficacy and the better side effect profile.

And again, many of these symptoms such as the muscle aches and pains and joint pain and hot flashes really go away once the drug is stopped. If not, during the treatment we have drugs available to take care of hot flashes. We have, we can prescribe non-steroidal anti inflammatory drugs for the muscle aches and pains. Exercise helps, swimming helps, healthy balanced diet and drinking fluids sometimes can help as well, these are some comments I actually received from my patients as well.



So I think we went over a number of treatment approaches and the side effects and how we handle those in the clinic. The only thing I want to add is that again, drugs can induce different side effects in different people. I think there's a lot of going on in the body and how the body reacts against the drugs, so therefore we cannot predict. We see what happens and then we try to manage to the best we can because the drug at the end is helpful and we don't want to stop the drug.

And furthermore, we also advise our patients to go to support groups and maybe share the experiences, what worked, what didn't work, even either within the institution, support groups, or support groups such as this lovely one (Breast Cancer Network of Strength) which is doing this program tonight, or Susan Komen has the website giving out information. Again as I mentioned the ShareRing Network, Sisters Network and Breast Cancer Survivor Coalition for example are just a few which comes to my mind right now, but there are a number of websites which actually addresses and some of them have chats also where patients can actually discuss with each other what works and what didn't work for them.

I think I went over a little bit of time, but I don't want to take away a lot from your questions. I'm ready for the questions.

And our first question comes from Janet.

JANET: Yes, I understand that when you take the chemotherapy there's a term called chemo brain, is that correct?

DR. BANU ARUN: Yes.

JANET: Right. Now does the memory get better after a while, because this was eight years ago and my memory is still, still bad?

DR. BANU ARUN: Right. So Janet that's a very good question, I'm glad that you brought it up. There's one major problem with the chemo brain. We have given it a name, but nobody knows what the mechanism is and how it happens. So therefore we don't know how to fix it. Many studies have not shown any structural changes on CTs and MRIs, it's more what our patients describe, cognitive dysfunctions, memory, maybe not being sharp or remembering. What I have experienced is that it gets better with time and a number of my patients tell me that you know, they do, they keep themselves busy, do puzzles and the new Sudoku, which is very in and that really helps. But I think that's the only thing we can say, is that we really don't know what is causing it, but it's real, it's there and we tell our patients to kind of keep occupying, kind of training, exercising with the brain. And in many patients it gets better. In some there is a residual effect where the patient still keeps complaining of the cognitive dysfunctions and kind of learns to live with that.

JANET: Yes. Are you saying though that you, you're saying that you don't know whether the chemotherapy causes it actually?

DR. BANU ARUN: No I'm saying that the chemotherapy causes it, but we don't know how and why. That's why we don't know how to really fix it, but research is going on in that area.

JANET: And when you say it gets better in time, what do you mean exactly, do you have a time period, like this is eight years ago?

DR. BANU ARUN: Right. It takes, usually it gets better within a year, and then...

JANET: Within a year?

DR. BANU ARUN: Yes.

OPERATOR: Yes, our next question comes from Bays (sp?).

BAYS: I'm glad that you're having this conference. You're the first one I ever heard. I was diagnosed with CML leukemia and inflammatory breast cancer and every time I ask the doctor, you know, which came first, the chicken or the egg, none of them could ever

answer, other than the Leukemia Lymphoma Society said that the leukemia is usually the secondary.

DR. BANU ARUN: Right. Usually what happens is that the leukemia risk increases, but not all of them, but some of the breast cancer drugs and I don't know what you received. But it takes about 15 years or so. So I don't know what the timing of your diagnosis is, if you got breast cancer and then...

BAYS: They're both the same. They were both diagnosed October of '04.

DR. BANU ARUN: Yes so then the breast cancer treatment has not caused it.

BAYS: Not the treatments just the condition.

DR. BANU ARUN: I don't, I don't think that there is a known condition linking breast cancer to leukemia genetically at this point. There are no genes where we know that if a person has a gene that she will develop breast and, breast cancer and leukemia. It might be that it's just two separate cancers and we have patients developing breast cancer and lung cancer separately or leukemia and ovarian cancer separately. But there is no known direct relation at this point, if it happens the same time.

BAYS: Thank you.

OPERATOR: And your next question comes from Kristen.

KRISTEN: Hi, I had kind of two questions. One is if you had neutropenia during your chemotherapy, which I unfortunately did, are you at any greater risk for leukemia or heart conditions later from the AC regimen. And the other concern I had is that, those of us who are pre-menopausal when we did chemo, I ended up with menopause which has some cognitive effects I understand, and the cognitive effects of the chemo brain thing. Is there anything known about which might be, what things might be due to menopause and what might be due to the chemo in this, this cognitive syndrome that shows up after chemo?

DR. BANU ARUN: Thanks Kristen. So the first part, having neutropenia or neutropenic does not increase the risk of leukemia or heart disease, because the neutropenia really is used by the suppressive effect of the chemotherapy, which then goes away and you are ready for the next cycle. So it is not a sign of, during the treatments, it is not a sign of leukemia. However, if the counts do not recover months after chemotherapy, then you know, one should evaluate the bone marrow. And again, there is no relation between neutropenia incidences during chemo and heart disease.

I think your second question, the first one; Janet asked that question as well. So we really don't know what is really causing chemo brain. In pre-menopausal women who go into menopause, it gets even more complicated because we know that cognitive functions in post menopausal women, there's a general population it changes and that's for example, the reason why a number of women want to take hormone replacement

therapy to overcome that. Then the thing with menopausal cognitive dysfunction is that once menopause is over, a number of women actually think everything is getting better. So I think that could be maybe a differentiating factor between chemotherapy induced cognitive dysfunctions and menopausal dysfunctions. But there are no tests or markers or blood work which can tell you and your doctor that if you're having some cognitive dysfunction that's from the menopause or from the chemotherapy. And maybe it's a mixed bag.

KRISTIN: Just to follow-up on the **neutropenia**, I was thinking of the concern is the leukemia in the long-term, you're saying there's nothing that links or would increase the possibility of having leukemia 15 years from now related to the **neutropenia**?

DR. BANU ARUN: Having had **neutropenia** episodes during treatment does not increase the risk.

KRISTIN: Okay.

DR. BANU ARUN: The **neutropenia** get's better after treatment.

KRISTIN: Okay. There's no long-term damage?

DR. BANU ARUN: But there's long-term damage from chemotherapy in general, that's about 1%, but not more in women who have neutropenia versus who don't.

KRISTIN: Thank you. That took my mind very much at ease.

FEMALE SPEAKER: All right, thank you for taking my call. Do you Doctor have any information on Arimidex induced high blood pressure? And how common is it, and what can be done about it?

DR. BANU ARUN: So the Arimidex and the aromatase inhibitors are new drugs, so they, I think the safety data we have is a little bit more than five years now versus the Tamoxifen which we have for more than 20 years. So whenever we discuss the indications of the new drugs we obviously go over all of the side effects which is known. But then with time, we see that there might be some other new side effects. So hypertension is not a known side effect of Arimidex. However, I have seen some patients who develop hypertension on Arimidex. Now there can be many reasons. Age-related hypertension, again it needs to be worked out at first before saying its drug related. Once the diagnosis of hypertension is established, regardless what the cause is Arimidex or age-related or something else, the treatment of hypertension is pretty standard and we give the same drugs we give anyone with hypertension, with the help and consultation of our cardiology colleagues.

FEMALE SPEAKER: Thank you.



DR. BANU ARUN: Thank you.

ARLENE KALLICK: At this time we have to end this portion of our call and we'd like to thank you Dr. Arun for your really insightful and excellent presentation.

DR. BANU ARUN: Well thank you very much.

ARLENE KALLICK: In presenting "Dealing with the Side Effects of Treatment Now and Later" you covered a tremendous amount of material. I'm sure everyone's going to be reading the transcript. Because of the generosity of healthcare professionals like yourself, it's really possible for the Network of Strength to provide useful information and assistance through the breast cancer journey. I thank you very much.

DR. BANU ARUN: Thank you it was my pleasure and have a nice evening everyone.